

# Appendix C

## Airport Capacity Design Team Project Summaries<sup>1</sup>

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### Background

Recognizing the problems posed by congestion and delay within the National Airspace System, the Federal Aviation Administration (FAA) asked the aviation community to study the problem of airport congestion through the Industry Task Force on Airport Capacity Improvement and Delay Reduction chaired by the Airport Operators Council International.

By 1984, aircraft delays recorded throughout the system highlighted the need for more centralized management and coordination of activities to relieve airport congestion. In response, the FAA established the Airport Capacity Program Office, now called the Office of System Capacity and Requirements (ASC). The goal of this office and its capacity enhancement program is to identify and evaluate initiatives that have the potential to increase capacity, so that current and projected levels of demand can be accommodated within the system with a minimum of delay and without compromising safety or the environment.

In 1985, the FAA initiated a renewed program of Airport Capacity Design Teams at various major air carrier airports throughout the U.S. Each Capacity Team identifies and evaluates alternative means to enhance existing airport and airspace capacity to handle future demand and works to develop a coordinated action plan for reducing airport delay. Over 30 Airport Capacity Design Teams have either completed their studies or have work in progress.

The need for this program continues. In 1993, 23 airports each exceeded 20,000 hours of airline flight delays. If no improvements in capacity are made, the number of airports that could exceed 20,000 hours of annual aircraft delay is projected to grow from 23 to 32 by 2003. The challenge for the air transportation industry in the nineties is to enhance existing airport and airspace capacity and to develop new facilities to handle future demand. As environmental, financial, and other constraints continue to restrict the development of new airport facilities in the U.S., an increased emphasis has been placed on the redevelopment and expansion of existing airport facilities.

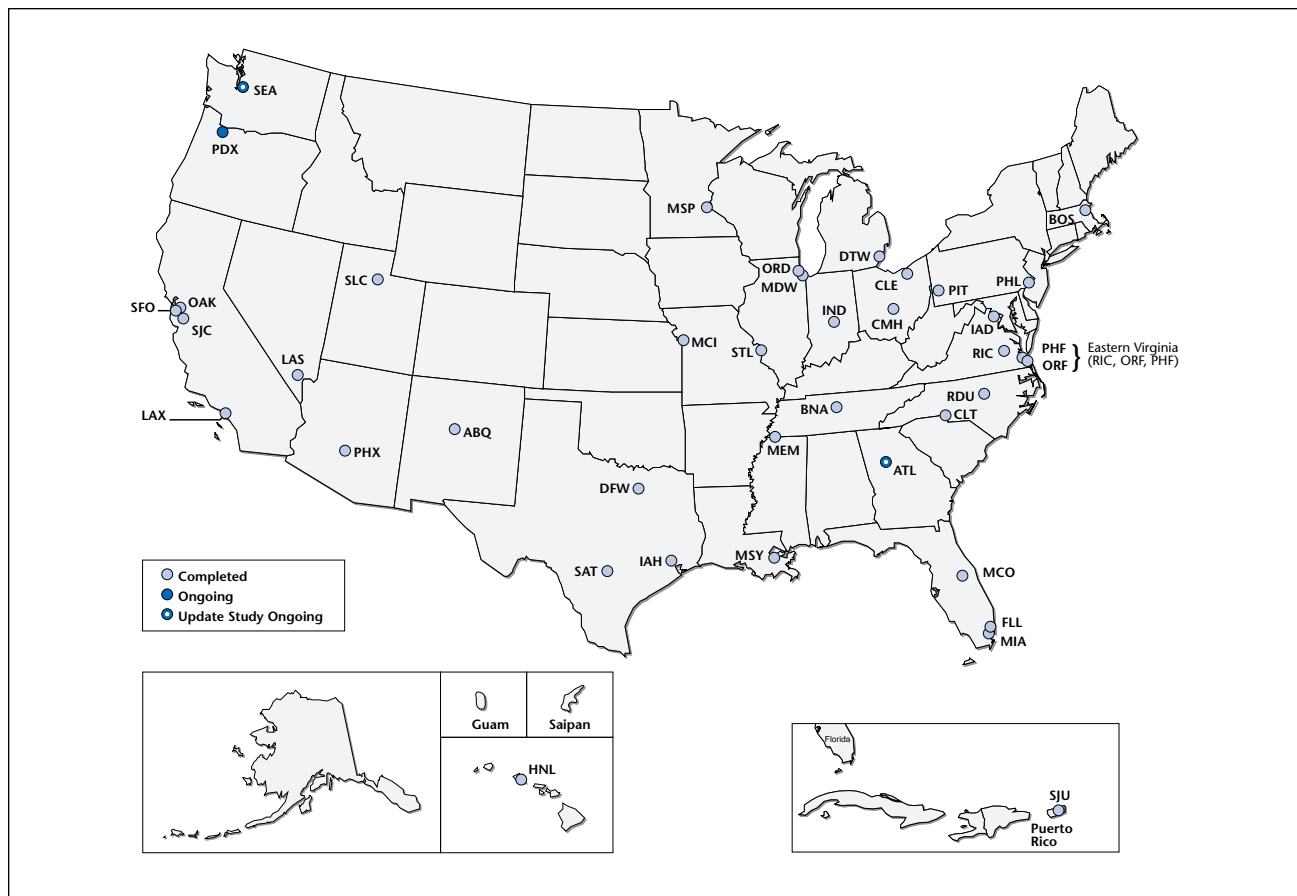
### Objectives

The major goal of a Capacity Team is to identify and evaluate proposals to increase airport capacity, improve airport efficiency, and reduce aircraft delays while maintaining or improving aviation safety. To achieve this objective, the Capacity Team:

- Assesses the current airport capacity.
- Examines the causes of delay associated with the airfield, the immediate airspace, and the apron and gate-area operations.
- Evaluates capacity and delay benefits of alternative air traffic control (ATC) procedures, navigational improvements, airfield development, and operational improvements.

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1. As of 10-01-94.



## Scope

The Capacity Team limits its analyses to aircraft activity within the terminal area airspace and on the airfield. They consider the operational benefits of the proposed airfield improvements, but do not address environmental, socio-economic, or political issues regarding airport development. These issues need to be addressed in future airport planning studies, and the data generated by the Capacity Team can be used in such studies.

## Methodology

The Capacity Team, which includes representatives from the FAA, the airport authority of the airport under study, the appropriate State Department of Transportation, various aviation industry groups, and members of the local general aviation community meet periodically for

review and coordination. The Capacity Team members consider suggested capacity improvement alternatives proposed by the FAA's Office of System Capacity and Requirements, FAA Technical Center, Regional Aviation Capacity Program Manager, and by other members of the Team. Alternatives which are considered practicable are developed into experiments which can be tested by simulation modeling. The FAA Technical Center's Aviation Capacity Branch provides expertise in airport simulation modeling. The Capacity Team validates the data used as input for the simulation modeling and analysis and reviews the interpretation of the simulation results. The data, assumptions, alternatives, and experiments are continually reevaluated, and modified where necessary, as the study progresses. A primary goal of the study is to develop a set of capacity-producing recommendations, complete with planning and implementation time horizons.

Initial work consists of gathering data and formulating assumptions required for the capacity and delay analysis and modeling. Where possible, assumptions are based on actual field observations at the target airport. Proposed improvements are analyzed in relation to current and future demands with the help of FAA computer models, the Airport and Airspace Simulation Model (SIMMOD), the Runway Delay Simulation Model (RDSIM), and the Airfield Delay Simulator (ADSIM).

The simulation models consider Air Traffic Control procedures, airfield improvements, and traffic demands. Alternative airfield configurations are prepared from present and proposed airport layout plans. Various configurations are evaluated to assess the benefit of projected improvements. Air Traffic Control procedures and system improvements determine the aircraft separations to be used for simulations under both VFR and IFR.

Air traffic demand levels are derived from *Official Airline Guide* data, historical data, and Capacity Team and other forecasts. Aircraft volume, fleet mix, and peaking characteristics are considered for each of the three different demand forecast levels (Baseline, Future 1, and Future 2). From this, annual delay estimates are determined based on implementing various improvements. These estimates take into account historic variations in runway configuration, weather, and demand. Annual delay estimates for each configuration are then compared to identify delay reductions resulting from the improvements. Following the evaluation, the Capacity Team develops a plan of recommended alternatives for consideration.

## Reports

Since the renewal of the program in 1985, 37 Airport Capacity Design Team studies have been completed. Currently, three Capacity Design Team studies are in progress. The following listing provides locations and dates for completed studies.

## Design Team Completion Dates

Albuquerque Int'l.....	1993
Boston Logan Int'l.....	1992
Charlotte/Douglas Int'l .....	1991
Chicago Midway .....	1991
Chicago O'Hare Int'l .....	1991
Cleveland-Hopkins Int'l .....	1994
Dallas-Ft. Worth Int'l.....	1994
Detroit Metropolitan Wayne County .....	1988
Eastern Virginia Region.....	1994
Fort Lauderdale-Hollywood Int'l .....	1993
Greater Pittsburgh Int'l .....	1991
Honolulu Int'l .....	1992
Houston Intercontinental.....	1993
Indianapolis Int'l .....	1993
Kansas City Int'l .....	1990
Lambert St. Louis Int'l .....	1988
Las Vegas McCarran Int'l.....	1994
Los Angeles Int'l.....	1991
Memphis Int'l .....	1988
Metropolitan Orlando Int'l.....	1990
Miami Int'l .....	1989
Minneapolis-Saint Paul Int'l.....	1993
Nashville Int'l.....	1991
New Orleans Int'l .....	1992
Oakland Int'l.....	1987
Philadelphia Int'l .....	1991
Phoenix Sky Harbor Int'l.....	1989
Port Columbus Int'l .....	1993
Raleigh-Durham Int'l.....	1991
Salt Lake City Int'l .....	1991
San Antonio Int'l .....	1992
San Francisco Int'l .....	1987
San Jose Int'l .....	1987
San Juan Luis Muñoz Marín Int'l.....	1991
Seattle-Tacoma Int'l .....	1991
Washington Dulles Int'l.....	1990
William B. Hartsfield Atlanta Int'l.....	1987

